

AMENDMENTS TO THE CLAIMS

Claim 1 (Withdrawn): A solder for joining microelectromechanical components, wherein the solder comprises a eutectic mixture of gold and bismuth.

Claim 2 (Previously Presented): A microelectromechanical component having at least one soldering layer for joining to at least one further component, which component includes at least one soldering layer made from a solder comprising a eutectic mixture of gold and bismuth and a bismuth layer for producing a soldered joint with to a gold layer.

Claim 3 (Withdrawn): The microelectromechanical component as claimed in claim 2, which includes soldering layers on opposite sides for joining to at least two further components.

Claim 4 (Original): The microelectromechanical component as claimed in claim 2, wherein at least one soldering layer, prior to the soldering operation, has a layer thickness of from 100 nm to 10 μm .

Claim 5 (Currently Amended): A microelectromechanical device, wherein a soldered joint including a solder comprising a eutectic mixture of gold and bismuth joins at least two components, at least one component comprises at least two substrates joined together by said solder, and each substrate has a thermoelectric material facing the other substrate arranged thereon, wherein an orientation of a layer arrangement of the thermoelectric material and the solder of each of the at least two substrates is alternatingly spaced between the thermoelectric material of the other of the at least two substrates.

Claim 6 (Previously Presented): The microelectromechanical device as claimed in claim 5, wherein said thermoelectric material is arranged in the form of one of a Peltier cooler and a thermoelectric transducer.

Claim 7 (Withdrawn): The microelectromechanical device as claimed in claim 5, wherein at least one soldered joint joins a component to a laser diode circuit.

Claim 8 (Withdrawn): The microelectromechanical device as claimed in claim 5, wherein at least one soldered joint joins a component to a fluidic cell.

Claim 9 (Withdrawn): The microelectromechanical device as claimed in claim 5, wherein at least one soldered joint joins a component to an IDC structure as humidity sensor.

Claim 10 (Withdrawn): The microelectromechanical device as claimed in claim 5, wherein at least one soldered joint joins a component to a heat sink.

Claim 11 (Withdrawn): The microelectromechanical device as claimed in claim 5, wherein at least one soldered joint joins a component to one of an optoelectronic amplifier, an optoelectronic modulator, an LED, a photodiode, a phototransistor and an optocoupler.

Claim 12 (Withdrawn) The microelectromechanical device as claimed in claim 5, wherein a joint is formed by means of submount technology using the solder.

Claim 13 (Withdrawn): A process for producing a microelectromechanical structure, the process comprising:

- a) applying one of bismuth, gold and a mixture of bismuth and gold as first soldering partner to a first side of a soldered joint, and
- b) producing a eutectic soldered joint by combining the first solder partner with a second solder partner comprising one of gold, bismuth, and a mixture of gold and bismuth under the action of heat.

Claim 14 (Withdrawn): The process as claimed in claim 13, further comprising applying gold as second solder partner to a second side of the soldered joint, wherein bismuth as the first solder partner.

Claim 15 (Withdrawn): The process as claimed in claim 13, wherein at least one layer of the soldered joint is applied using one of evaporation coating, sputtering and molecular beam epitaxy.

Claim 16 (Withdrawn): The process as claimed in claim 13, wherein at least one layer of the soldered joint is produced using one of a CVD process or by the application of a paste.

Claim 17 (Withdrawn): The process as claimed in claim 13, wherein patterning of at least one layer of the soldered joint is performed by one of dry etching and wet etching.

Claim 18 (Withdrawn): The process as claimed in claim 13, wherein the patterning of at least one soldering layer of the soldered joint is performed using a solder as part of a lift off process.

Claim 19 (Withdrawn): An assembly including a first structure connected to a second structure by a solder joint, wherein the solder joint comprises a eutectic mixture of gold and bismuth.

Claim 20 (Withdrawn): An assembly including a first structure connected to a second structure by a solder joint, wherein the solder joint consists of a eutectic mixture of gold and bismuth.

Claim 21 (Withdrawn): A method for joining a first structure to a second structure, the method comprising:

forming first and second solder partners on the first and second structures, respectively, wherein the first solder partner comprises gold and the second solder partner comprises bismuth;

connecting the first and second structures such that the first solder partner contacts the second solder partner; and

heating the first and second solder partners such that the first and second solder partners form a eutectic mixture of gold and bismuth.

Claim 22 (Previously Presented): A microelectromechanical device as claimed in claim 5, wherein at least one component has one of an electrical functionality, a thermal functionality, and a bonding functionality.